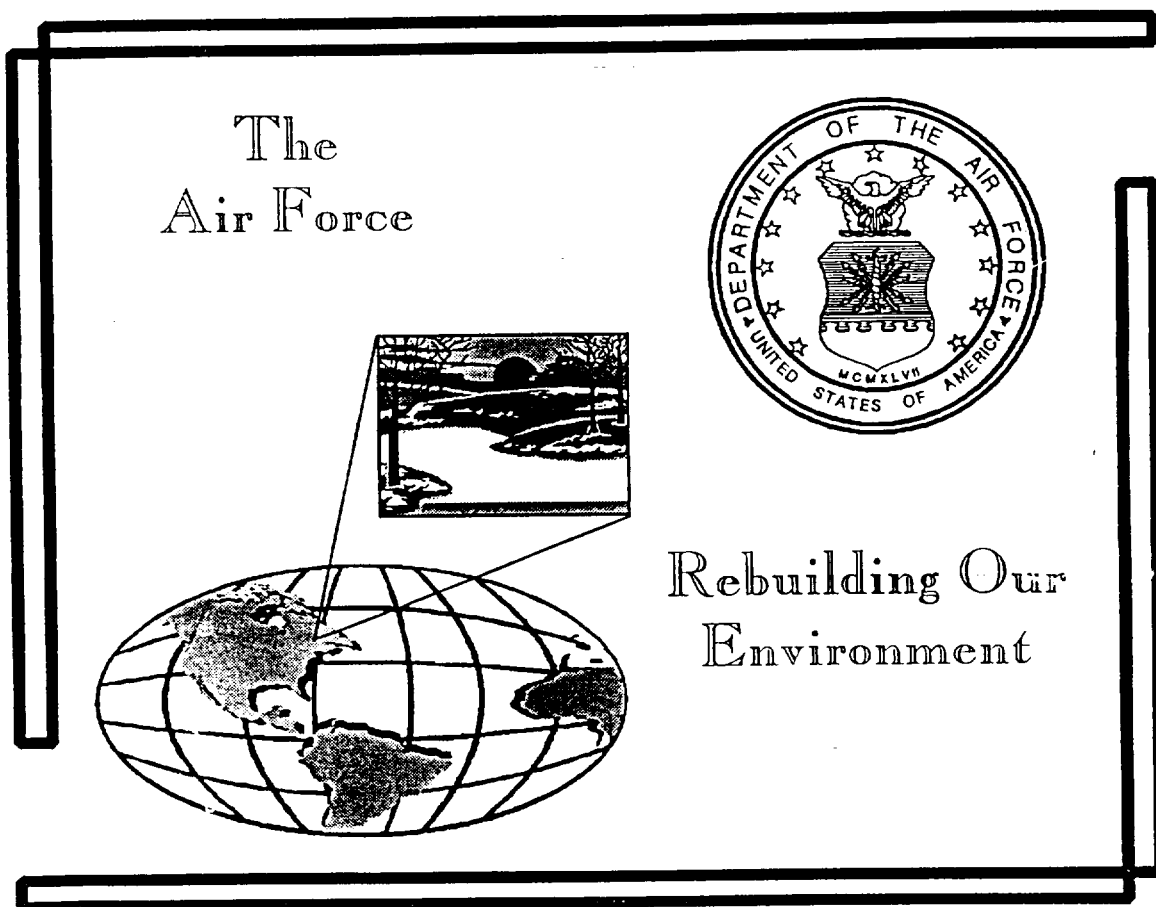


FINAL

FIRST FIVE-YEAR REVIEW REPORT  
FOR  
LORING AIR FORCE BASE

SEPTEMBER 2000



United States Air Force Base Conversion Agency  
Installation Restoration Program  
Loring Air Force Base, Maine



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1

1 CONGRESS STREET, SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023

September 29, 2000

Dave Belya, Site Manager  
AFBCA/DA Loring  
RR #1, Box 1719  
Limestone, Maine 04750-9743

**Re: Five-Year Review Report, Loring Air Force Base, Limestone, Maine**

Dear Mr. Belya:

Thank you for the opportunity to review *Five-Year Review Report for the Loring Air Force Base, Limestone, Maine* dated September 2000. Upon review, the EPA concurs with the finding that all remedies as implemented, or in the process of being implemented, by the Air Force are protective of human health and the environment.

The Report includes reviews for 19 sites distributed throughout 14 Operable Units (OU) identified during the base closure process including the base wide groundwater, surface water, and landfill OUs and is consistent with EPA's *Five Year Review Guidance, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-02* (May 1991) and *Supplemental Five-Year Review Guidance, (OSWER) Directive 9355-02A* (August 1994). The selection of a Statutory and Policy Reviews for various sites is consistent with the above guidance. For those sites which that are still in the remedy operation phases, EPA is pleased that the Air Force has reiterated its commitment to continuing the CERCLA cleanup process to a successful conclusion. All of these sites have institutional controls in place, or are in the process of having them placed on the property, as a component to the remedy in order to minimize potential threats to human health.

EPA fully concurs with the findings and recommendations for further action in the review. Specifically, obtaining institutional controls for the two off-base properties that are required due to the expansion of the groundwater management zones and continuation of the bioventing and SVE systems. Once these recommendations are carried out, they will ensure full protectiveness of the remedies implemented.

EPA also concurs that future Five Year Reviews will not be required for: OU 7 - Quarry Site; OU 10- Former Solvent Storage Building, Pumphouses 8210 and 8270; and OU 11 - Refueler Maintenance Shop Area and Vehicle Maintenance Building.

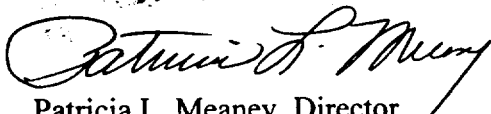
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As indicated in EPA's letter of March 31, 1999, this five-year review was triggered by the Railroad Maintenance Site which is Operable Unit 6 (OU6) Remedial Action start of February 10, 1995 and was therefore due February 10, 2000. Due to additional work which the Air Force conducted in order to document unrestricted use at several areas the due date for finalizing this Five-Year Review was extended to September 30, 2000. Consistent with Section 121(c) of CERCLA and (OSWER) Directive 9355-02A, the next statutory required five-year review must be finalized prior to September 30, 2005.

Sincerely,



Patricia L. Meaney, Director  
Office of Site Remediation and Restoration

cc.	Michael Nalipinski,	EPA
	Betsy Mason,	EPA
	Mary Sanderson,	EPA
	Naji Akladiss,	Maine DEP

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For Loring AFB, Maine  
September 2000

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## LIST OF ACRONYMS

ABB-ES	ABB Environmental Services
AEW	Air Extraction Well
AFBCA	Air Force Base Conversion Agency
AFCEE	Air Force Center for Environmental Excellence
AHS	Auto Hobby Shop
AIW	Air Injection Well
ARAR	Applicable or Relevant and Appropriate Requirement
AST	Aboveground Storage Tank
BB/LS	Butterfield Brook/Limestone Stream
BCT	BRAC Cleanup Team
BEHP	bis(2-ethylhexyl)phthalate
BEI	Bechtel Environmental Services, Inc.
bgs	below ground surface
BL	Base Laundry
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BXSS	Base Exchange Service Station
CAP	Corrective Action Plan
CDM	Camp, Dresser, & McKee
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Chemical of Concern
CSF	Cancer Slope Factor
CSP	Coal Storage Pile
CSSA	Contract Storage Shed Area
CVOC	Chlorinated Volatile Organic Compounds
CWA AWQC	Clean Water Act Ambient Water Quality Criteria
cy	cubic yard
DC	Double Cantilever
DCA	Dichloroethane
DCE	Dichloroethene
DHS	Maine Department of Human Services
Disposal ROD	April 1996 Record of Decision for the Disposal of Loring Air Force Base, Maine
DNAPL	Dense Non-Aqueous Phase Liquid
DOT	Maine Department of Transportation
DP	Demineralization Plant
DRMO	Defense Reutilization and Marketing Office

EBGB	East Branch, Greenlaw Brook
EE/CA	Engineering Evaluation/Cost Analysis
EGWST	East Gate Waste Storage Tank
EOD	Explosive Ordnance Disposal
ES	Entomology Shop
FAD	Fly Ash Disposal
FFA	Federal Facility Agreement
FJETC	Former Jet Engine Test Cell
FLA	Flightline Area
FLDD	Flightline Drainage Ditch
FS	Feasibility Study
FSSB	Former Solvent Storage Building
FTA	Fire Training Area
FTF	Fuels Tank Farm
FVMP	Former Vehicle Motor Pool
GMZ	Groundwater Management Zone
HI	Hazard Index
HLA	Harding Lawson Associates, Inc.
IDW	Investigation-Derived Waste
JEBS	Jet Engine Buildup Shop
JTL	J.T. Langille - Aroostook Engineers, Inc.
LAFB	Loring Air Force Base
LDA	Loring Development Authority of Maine
LF-2	Landfill 2
LF-3	Landfill 3
LFS	Low Flow Sampling
LLDPE	Linear Low Density Polyethylene
LMR	Little Madawaska River
LNAPL	Light-Non-Aqueous Phase Liquid
LTM	Long-Term Monitoring
LTMP	Long-Term Monitoring Plan
M&M	Monitoring and Maintenance
MA	Magnetic Anomalies
MCL	Maximum Contaminant Levels
MEDEP	Maine Department of Environmental Protection
MEG	Maximum Exposure Guideline
MW	Montgomery Watson

NCP	National Contingency Plan
NDA	Nose Dock Area
NFA	No Further Action
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
O&M	Operation and Maintenance
OFR	Outdoor Firing Range
OLM	Organic Leaching Model
OPS	Operating Properly and Successfully
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
OWS	Oil/Water Separator
PAAR	Preliminary Alternative Analysis Report
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCE	Tetrachlorethene
PH	Pumphouse
PID	Photoionization Detector
PPDP	Power Plant Drainage Pipe
ppm	Parts Per Million
PRG	Preliminary Remediation Goal
PSP	Patrick St.Peter, and Sons, Inc.
PX	Post Exchange
RA	Risk Assessment
RAM	Risk Assessment Methodology
RAO	Remedial Action Objective
RBSC	Risk-Based Soil Concentrations
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RG	Remediation Goal
RI	Remedial Investigation
RI/ASI	Remedial Investigation/Additional Site Investigation
RME	Reasonable Maximum Exposure
RMSA	Refueler Maintenance Shop Area
ROD	Record of Decision
RRMS	Railroad Maintenance Site
SB	Snow Barn
SCF	Spill Containment Facility
SI	Site Investigation
SPDA	Solvent Paint Dock Area
SSA	Support Services Area

SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compounds
TBC	to be considered
TCA	Trichloroethane
TCE	Trichloroethene
TI	Technical Impracticability
TPH	Total Petroleum Hydrocarbons
URS	URS Consultants, Inc.
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
UTS	Underground Transformer Site
VC	Vinyl Chloride
VMB	Vehicle Maintenance Building
VOC	Volatile Organic Compounds
WB/BB	Wolverton Brook/Brandy Brook
WBGB	West Branch, Greenlaw Brook

## EXECUTIVE SUMMARY

### Introduction

The Air Force Base Conversion Agency (AFBCA) has conducted a five-year review of the remedial actions implemented at the Loring Air Force Base (LAFB) site in Limestone, Maine. This review was conducted from August 1999 through February 2000. This report documents the results of the review. The report has been prepared by the AFBCA staff at LAFB with assistance from U.S. Environmental Protection Agency (USEPA) and Maine Department of Environmental Protection (MEDEP) staff.

The purpose of five-year reviews is to determine whether the remedies at a site are protective, or are expected to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify deficiencies found during the review, if any, and recommendations to address them.

### Organization

This report is organized according to the requirements for a review in accordance with the National Contingency Plan (NCP). Section 2 of this report reviews sites where there are "hazardous substances, pollutants, or contaminants" remaining at the site above levels that allow for unlimited use and unrestricted exposure. Reviews at such sites are statutory and the National Contingency Plan (NCP) calls for the lead agency to review them no less often than every five years. Section 3 of this report reviews sites where remedies are in place which have not met their remedial goals and are being actively managed by the Air Force. These sites are reviewed as a matter of policy.

### Conclusions and Recommendations

Remedies implemented at Loring Air Force Base continue to be protective of human health and the environment. The Air Force recommends statutory five-year reviews continue at Landfill 2, Landfill 3, the Contractor Storage Shed, the Explosives Ordnance Disposal Range, and the Outdoor Firing Range. The Air Force has recommended that no further five year reviews be conducted for the soils and source material at the Quarry, Pumphouse 8210, Pumphouse 8270, Former Solvent Storage Building, Refueler Maintenance Service Area, and the Vehicle Maintenance Building since "hazardous substances, pollutants, or contaminants" are not remaining at these sites above levels that allow for unlimited use and unrestricted exposure. The Air Force recommends that five year policy reviews continue for Operable Unit 12, Operable Unit 13, the Former Jet Engine Test Cell, Fire Training Area, Auto Hobby Shop, Jet Engine Buildup Shop, Entomology Shop, and the Base Laundry since remedial goals have not yet been achieved. Section 3.6 describes the areas subject to long-term remedial action for Operable Unit 12.

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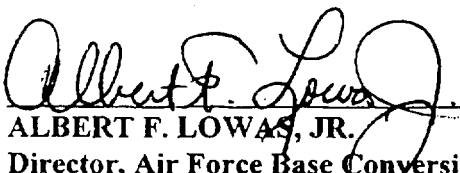
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The status of the applicable or relevant and appropriate requirements (ARARs) was reviewed for all the remedial actions in this review. All remedies comply with the ARARs presented in their respective RODS.

### Declaration Statement

The remedies at all sites under statutory review, except the remedy for OU 4, are protective of human health and the environment. The remedy selected for OU 4 is not protective; however, an Explanation of Significant Differences (ESD) is being prepared to modify the compliance and institutional control boundaries. Once the compliance and institutional control are in place, the remedy will be protective.

The remedies for all sites under policy review are expected to be protective of human health and the environment upon completion, and all immediate threats to human health and the environment have been addressed. The remedy selected for OU 12 is not protective; however, an Explanation of Significant Differences (ESD) is being prepared to modify the compliance and institutional control boundaries. Once the compliance and institutional control are in place, the remedy will be protective.

  
ALBERT F. LOWAS, JR.  
Director, Air Force Base Conversion Agency  
USAF

  
DATE

Concurrence:

## **SECTION 1.0**

### **FIVE-YEAR REVIEW REPORT OVERVIEW**

The Air Force Base Conversion Agency (AFBCA) has conducted a five-year review of the remedial actions implemented at the Loring Air Force Base (LAFB) site in Limestone, Maine. This review was conducted from August 1999 through February 2000. This report documents the results of the review. The report has been prepared by the AFBCA staff at LAFB with assistance from U.S. Environmental Protection Agency (USEPA) and Maine Department of Environmental Protection (MEDEP) staff.

The purpose of five-year reviews is to determine whether the remedies at a site are protective, or are expected to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify deficiencies found during the review, if any, and recommendations to address them.

Portions of this review are required by statute. The Air Force, as Federal lead agency for the site, must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA § 121 (c) as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

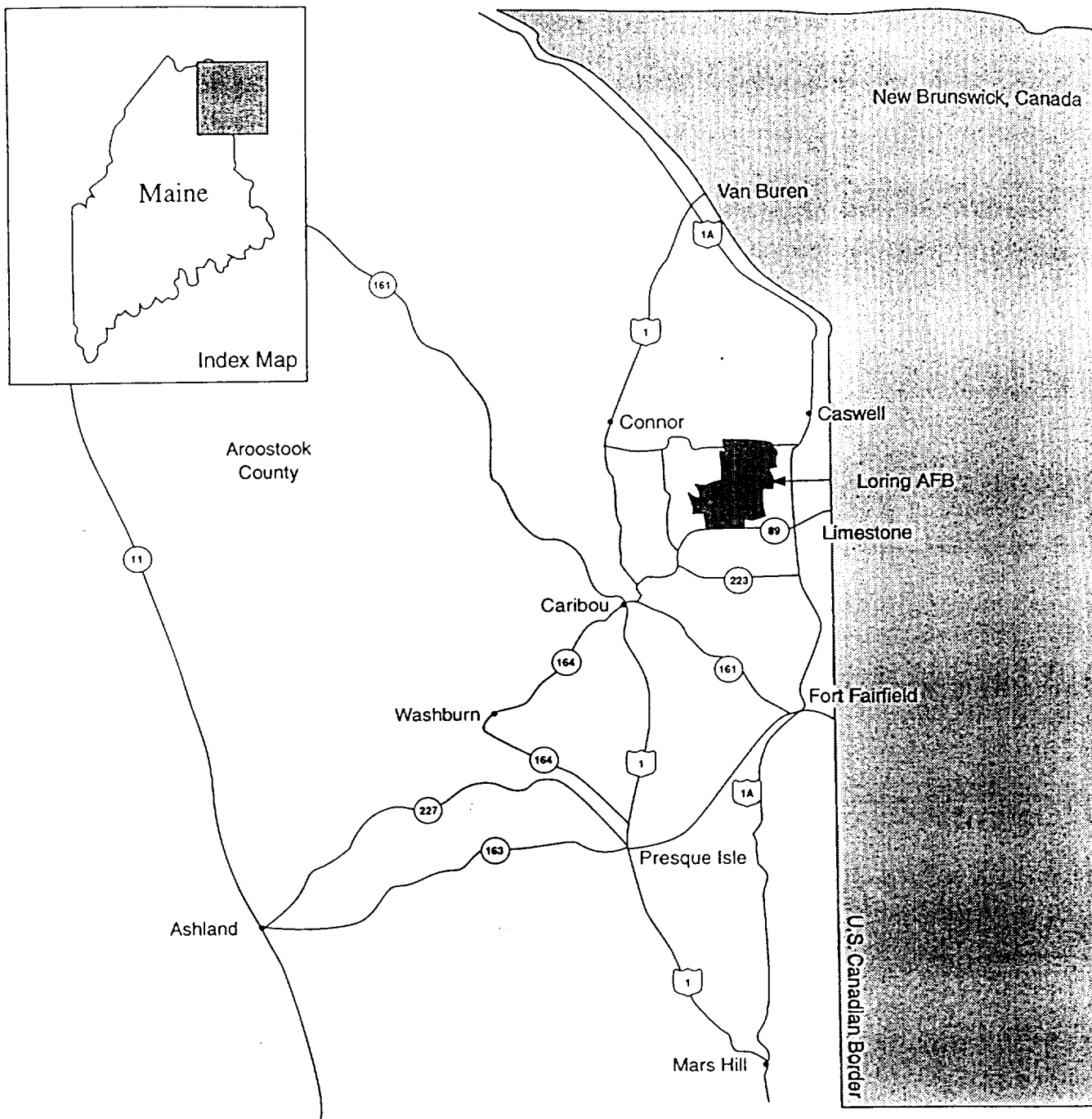
If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

Although other portions of this review are not required by statute, those portions of this review are being conducted in accordance with policy. These sites have been reviewed because remedies are in place which have not met their remedial goals and are being actively managed by the Air Force.



This is the first five-year review for the LAFB site. The triggering action for this review is the date of the substantial beginning of remedial action for Operable Unit (OU) 2. A number of sites, including landfills, at the former LAFB have contaminants remaining in place which

are at levels which do not allow for unlimited use and unrestricted exposure. Other sites have remedies selected which have not yet met their remedial goals.

The LAFB National Priorities List (NPL) site is located in Aroostook County, in northern Maine (Figure 1-1). The U.S. Environmental Protection Agency has given the site the Comprehensive Environmental Response, Compensation and Liability Act Information System identification number of ME9570024522.



LEGEND

-  U.S. Highway
-  State Highway

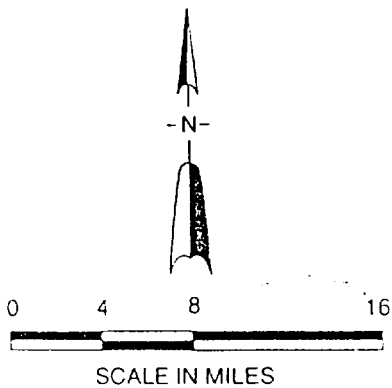


FIGURE 1-1

GENERAL LOCATION OF  
LORING AIR FORCE BASE

LORING AIR FORCE BASE

## **SECTION 1.1**

### **REPORT ORGANIZATION AND REQUIRED SITES**

This five-year review report will cover site-specific and operable unit-wide remedies at LAFB. The report is structured such that each section groups sites or operable units together under statutory review or policy review as follows.

#### **Statutory Review Sites (Section 2.0)**

- Operable Units 2 & 4, Landfill 2 and Landfill 3
- Operable Unit 3, Contractor Storage Shed Area
- Operable Unit 3, Explosive Ordnance Disposal Range and Outdoor Firing Range
- Operable Unit 7, Quarry Site
- Operable Unit 10, Former Solvent Storage Building, Pumphouses 8210 and 8270
- Operable Unit 11, Refueler Maintenance Shop Area & Vehicle Maintenance Building

#### **Policy Review Sites (Section 3.0)**

- Operable Unit 5, Former Jet Engine Test Cell
- Operable Unit 8, Fire Training Area
- Operable Unit 9, Auto Hobby Shop
- Operable Unit 10, Entomology Shop and Jet Engine Buildup Shop
- Operable Unit 11, Base Laundry
- Operable Unit 12, Basewide Groundwater
- Operable Unit 13, Basewide Surface Water/Sediment

## **SECTION 1.2**

### **NEXT REVIEW**

Given that this first five-year review is being completed in 2000, the next five-year review will be conducted in 2005. The review will cover specific sites and zones as appropriate at the time of the review.